

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-2 and 5-108 have been considered but are moot in view of the new ground(s) of rejection.

In particular, claims 1, 2, 5-73, 86-90, 92-96, and 104-108 are allowed. Claim 99 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. Claims 105-108 are rejected under 35 U.S.C. 112, 2nd paragraph. Claims 74-85 are rejected under 35 U.S.C. 102(e) in as being anticipated by Tanaka (U.S. Patent Application Publication 2002/0108043). Claims 97, 98, and 101 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al. (U.S. Patent 6,792,542). Claims 91 and 100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al., in view of Kate (U.S. Patent 6,023,490). And claims 102 and 103 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knutson et al. (U.S. Patent 6,788,710), in view of Official Notice.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 105-108 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 105-108 are dependent on "the method of claim 95". Claim 95, however, is directed to an apparatus (a system comprising at least first and second processors). Because of this disparity, claims 105-108 are indefinite.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 74-85 are rejected under 35 U.S.C. 102(e) as being anticipated by Tanaka (U.S. Patent Application Publication 2002/0108043).

Claims 74-85 are directed to a recording medium storing data, the data comprising a first audio signal and second audio signal, where the first audio signal is embedded as noise in the second audio signal. An audio signal stored on a recording medium constitutes non-functional descriptive material, because an audio signal, compressed or otherwise, does not provide the necessary functional and structural interrelationships that would allow the recording medium to instruct a machine to perform functions. Since claims 74-85 are directed to non-functional descriptive material, the only difference between the claimed product (the recording medium) and those disclosed by Tanaka (Fig. 1, 113-116) is the content of the non-functional

descriptive material. Where the only difference between a prior art product and a claimed product is printed matter that is not functionally related to the product, the content of the printed matter will not distinguish the claimed product from the prior art. *In re Ngai*, 367 F.3d 1336, 1339, 70 USPQ2d 1862, 1864 (Fed. Cir. 2004). See also *In re Gulack*, 703 F.2d 1381, 1385-86, 217 USPQ 401, 404 (Fed. Cir. 1983).

6. Claims 97, 98, and 101 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al. (U.S. Patent 6,792,542).

In regard to claim 97, Lee et al. disclose a method of processing a digital signal comprising the steps of:

providing a first digital signal representing first information (an auxiliary data signal is provided, column 5, lines 20-24);

providing a second digital signal (a primary data signal is provided, column 5, lines 41-46); and

embedding the first signal in the second signal by replacing Less Significant Bits (LSBs) of the second signal by bits of the first signal and retaining More Significant Bits (MSBs) of the second signal (the LSBs of the primary data signal are modified to carry the auxiliary data signal, column 5, lines 9-14),

whereby the first signal occurs as noise in the second signal (the modification of the LSBs of the primary signal equates to introducing the auxiliary signal as noise into the primary signal, column 6, lines 35-38).

In regard to claim 98, Lee et al. disclose a method of processing a digital signal comprising the steps of:

providing a first digital signal representing first information (an auxiliary data signal is provided, column 5, lines 20-24);

providing a second digital signal (a primary data signal is provided, column 5, lines 41-46); and

embedding the first signal in the second signal by selecting groups of N samples ("L" LSBs are available for each sample) and distributing over the N samples of each group corresponding sets of M samples of the first signal ("N" auxiliary data samples are distributed over L LSBs in each sample), where the ratio M/N is an integer fraction (N/L samples are required to embed an auxiliary data bit, column 5, line 66 to column 6, line 13).

In regard to claim 101, Lee et al. disclose the first signal is an encrypted signal (pseudo random modulation is added to secure the auxiliary data signal, column 5, lines 36-40).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 91 and 100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al., in view of Kate (U.S. Patent 6,023,490).

In regard to claim 91, Lee et al. disclose an apparatus for recovering a digital signal (Fig. 6a), the digital signal being encrypted (pseudo random modulation is added to secure the auxiliary data signal, column 5, lines 36-40) and combined as a combination with a second signal,

in which

the digital signal occurs as noise in the combination (the modification of the LSBs of the primary signal equates to introducing the auxiliary signal as noise into the primary signal, column 6, lines 35-38);

the digital signal is embedded as noise in the second signal (the LSBs of the primary data signal are modified to carry the auxiliary data signal, column 5, lines 9-14); and the apparatus comprising comprises:

a separator for separating the compressed and encrypted signal from the second signal (Fig. 5, a decoder separates the auxiliary signal from the primary signal, column 10, lines 53-61); and

a decryptor for decrypting the separated signal (the separated LSBs representing the auxiliary signal are multiplied by the same pseudo random number sequence used the in the encoder to decrypt the auxiliary data signal, column 10, lines 62-65).

Lee et al. do not disclose the digital signal (auxiliary signal) is compressed and a decompressor for decompressing the decrypted signal.

Kate discloses an apparatus for recovering a digital signal which has been embedded in a second signal, where the digital signal is compressed (by data compressing units, column 3, lines 54-67) and a decompressor for decompressing a signal (data expansion units to recover the compressed signal, column 6, lines 12-17).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Lee et al. to additionally compress the digital signal (auxiliary signal), because, as one of ordinary skill in the art would readily recognize, this would reduce the amount of data that needed to be embedded, thereby increasing the potential data rate.

In regard to claim 100, Lee et al. do not disclose the first signal is a compressed signal.

Kate discloses an apparatus for embedding a first signal in a second signal, where the digital signal is compressed (by data compressing units, column 3, lines 54-67).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Lee et al. to additionally compress the digital signal (auxiliary signal), because, as one of ordinary skill in the art would readily recognize, this would reduce the amount of data that needed to be embedded, thereby increasing the potential data rate.

9. Claims 102 and 103 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knutson et al. (U.S. Patent 6,788,710), in view of Official Notice.

In regard to claim 102, Knutson et al. disclose method of processing a digital signal comprising the steps of:

providing a first digital signal representing substantially unimpaired first information (auxiliary information such as bit mapped images are provided, column 7, lines 47-64);

providing an unencrypted second digital signal representing second information, and which is compressed according to a compression format having auxiliary data space (a signal encoded by an MPEG coder is provided, the MPEG data stream modified so that there is an auxiliary data space, column 3, lines 54-65);

combining the first signal comprising the substantially unimpaired first information with the second signal (the MPEG data stream and the auxiliary data stream are combined, column 3, lines 65-65); and

embedding at least part of the first signal being embedded in the auxiliary data space of the second signal (the auxiliary data stream is inserted within the available data space of the MPEG data stream, column 4, lines 13-33).

While Knutson et al. disclose the auxiliary data stream may be, e.g. a bit mapped image, Knutson et al. do not disclose the auxiliary data stream is compressed and/or encrypted.

Official Notice is taken that it is notoriously well known in the art to compress data streams (e.g. by using JPEG on image data streams).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Knutson et al. to compress and/or encrypt the first digital signal, because as one of ordinary skill in the art would readily recognize, this would reduce the amount of data that needed to be embedded, thereby increasing the potential data rate.

In regard to claim 103, Knutson et al. disclose part of the first signal is appended to the second signal (see Fig. 3, one auxiliary packet is appended for every two recorded packets, column 4, lines 28-33).

Allowable Subject Matter

10. Claims 1, 2, 5-73, 86-90, 92-96, and 104-108 are allowed.

The following is an examiner's statement of reasons for allowance:

With respect to claims 1, 2, and 5-58, Tanaka and the additional prior art of record do not disclose or suggest compressing and encrypting a digital audio signal to create a first audio signal, where the audio information in the first audio signal is substantially unimpaired compared to that of the digital audio signal, then embedding the first audio signal as noise into an unencrypted second audio signal. Tanaka combines encrypted audio data and unencrypted audio data as a stream of sequential audio data. However, there is no teaching or suggestion in Tanaka to embed a first compressed and encrypted audio signal as noise into a second audio signal. Additionally, the steps of embedding the first audio signal as noise into the second

audio signal would inherently require a particular machine or apparatus to implement the steps, and further, the steps are central to the purpose of the invention.

Claims 95 and 96 require systems with components that implement the method of claim 1. Thus, claims 95, 96, and 104-108 are allowed for the same reasons as claim 1.

With respect to claims 59-73, similarly to claim 1, claim 59 requires an apparatus that compresses and encrypts a digital audio signal to create a first audio signal, where the audio information in the first audio signal is substantially unimpaired compared to that of the digital audio signal, then embedding the first audio signal as noise into an unencrypted second audio signal.

With respect to claims 86-90 and 92-94, Tanaka does not disclose or suggest separating a first audio signal from a combined first audio signal and second signal, where the first audio signal is a compressed and encrypted audio signal that is embedded as noise in the second signal. Additionally, the steps of separating the first audio signal from the combination, where the first audio signal was embedded as noise in the second signal would inherently require a particular machine or apparatus to implement the steps, and further, the steps are central to the purpose of the invention.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

11. Claim 99 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Lee et al. and the additional prior art of record do not disclose or suggest scaling a value A of N samples as required by the limitations of claim 99.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lee et al. (U.S. Patent 6,154,484) disclose an additional method for embedding a first signal into a second signal.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRIAN L. ALBERTALLI whose telephone number is (571)272-7616. The examiner can normally be reached on Monday-Thursday, 8 AM to 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Brian L. Albertalli/
Examiner, Art Unit 2626